

## ABSTRACT

A connection end portion of a PC fiber 10 is fused by heating to provide a sealing portion 15 which seals holes 12a of a cladding 12. Length L of the sealing portion 15 is 5 determined by calculation based on the conditions such as an incident angle  $\theta$  [ $^{\circ}$ ] of signal light 22 with respect to the PC fiber 10, an outer diameter D [ $\mu\text{m}$ ] of the fiber, a diameter a [ $\mu\text{m}$ ] of the core of the fiber and a refractive index n of the sealing portion 15.